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GEOGRAPHIC INTELLIGENCE MEMORANDUM

CIA/RR GM 62-5
May 1962

THE STRUGGLE FOR JORDAN WATERS

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

THE STRUGGLE FOR JORDAN WATERS

The first segment of the Israeli National Water Conduit, which will extend from the upper Jordan Valley to the Negev Desert in the South, is scheduled to receive water pumped from Lake Tiberias in late 1963. Progress on the construction of major features of the conduit appears to justify Israeli confidence that the schedule will be met. With the completion of this segment, Jordan water will, for the first time, be transported beyond the limits of the Jordan Valley. The Arab states are firm in their stand that no compromise permitting Israel to divert water from the Jordan Valley can be reached, and they have loudly but ineffectively promoted retaliatory threats to deprive Israel of water by diverting major tributaries of the upper Jordan. South of Lake Tiberias on the lower Jordan River, Israel and Jordan are proceeding with less friction in the development of their respective irrigation projects.

I. The Master Plan of Israel

The core of Israel's plan for the development of water resources is the National Water Conduit -- a system of canals, tunnels, pumping stations, reservoirs, and pipelines to transport water overland from the Jordan Valley to southern Israel. This major artery will be linked to regional projects so that available water can be diverted to those areas where the need is greatest. Near Rosh Ha'ayin in central Israel the National Water Conduit will connect with pipelines of the Yarkon-Negev Project, which will carry water as far south as Beersheba in the northern Negev. Although water from the Jordan River is a critical element in the water plans of Israel and will eventually supply 30 percent of its water needs, the plans also rely heavily on the combined resources of ground water, sewerage, surface runoff, and water returned from irrigation.

The Beit Shean Project, designed to irrigate the Jordan and Beit Shean Valleys south of Lake Tiberias, is not connected with the National Water Conduit. Here, water drawn directly from Lake Tiberias is to replace that now being pumped from the Yarmouk and Jordan Rivers. It is anticipated that the Beit Shean Project will benefit from plans being considered for the diversion to the lower Jordan of water from saline springs now emptying into Lake Tiberias and from the pumping of Yarmouk waters into Lake Tiberias during the winter flood season.

Israel originally planned to tap the Jordan River near the Banat Jacub Bridge in the Demilitarized Zone north of Lake Tiberias. The water thus withdrawn was to be used to power a hydroelectric plant at Tabigha on the northwestern shore of Lake Tiberias. In 1953, a clash with Syria occurred when Israel was at work on the section of the canal within the Demilitarized Zone. Work was stopped after the issue was raised in the Security Council of the United Nations, and the 1.5 miles of canal within the Demilitarized Zone have never been completed. The present plan is to draw water for the National Water Conduit from Lake Tiberias, rather than the upper Jordan, by means of the pumping station at Tabigha. When, as Israel hopes, water becomes available from the upper Jordan River, the Tabigha pumping station will be converted into the hydroelectric plant originally planned.

When Stage I of Israel's plan is completed in late 1963, water from Lake Tiberias will be delivered to the area of Rosh Ha'ayin east of Tel Aviv by means of 44 miles of 108-inch concrete pipe, 3.4 miles of 108-inch steel pipe, 25 miles of open canal, and 6.7 miles of large-diameter tunnel. By 1964, Israel plans to pump about 160 million cubic meters (cu m) of water per year from Lake Tiberias; according to an Israeli engineer the capacity of the pumps at Tabigha is 200 million cu m per year. Stage II, tentatively planned for 1966, provides for a general increase in volume of water pumped and in storage and distribution facilities. By 1970, when all three stages of the plan have been completed, Israel expects to draw 320 million cu m of water from the Jordan River for the National Water Conduit, 100 million cu m for irrigation in the Hula area, and 50 million cu m for the Beit Shean Project, making a total of 470 million cu m per year withdrawn from the Jordan. Israeli estimates place the average annual flow of the Jordan within Israel at about 500 million cu m per year with extremes of 350 million cu m and 700 million cu m.

II. Problems Arising in Israel

The ultimate success of Israeli water plans is closely associated with the climatic regime of the eastern Mediterranean -- an unreliable element at best. There can be little assurance that climatic and hydrological conditions upon which planning has been based will remain unchanged in the coming years. Heavy pumping and a series of abnormally dry years have already brought about an unanticipated lowering of the water table on the coastal plain east of Tel Aviv. In the face of this threatened water shortage, a temporary steel pipeline has been placed in service between a completed portion of the 108-inch pipeline and Rosh Ha'ayin Springs. Through this temporary pipeline, surplus water from the Beryamina-Pardes area midway between Tel Aviv and Haifa is carried south to supplement the flow of Rosh Ha'ayin Springs. It is estimated that even after several years of plentiful rainfall, however, these springs will provide only 120 million cu m of water per year whereas the sustained withdrawal during the late 1950's amounted to 180-200 million cu m per year.

The head of the Research Unit of the Mekoroth Water Company, Ltd., which is the contractor for the water plan of Israel, has charged that a serious miscalculation has been made concerning the total volume of water that will be available from the Jordan River for the National Water Conduit, and others have asserted that withdrawal of large volumes of water will lower the level of Lake Tiberias significantly. Both charges have serious economic implications, and both have been firmly denied by the Director General of Water Planning for Israel. Nevertheless, projected water requirements for 1969 are 22 million cu m more than the anticipated supply from all sources. Although this shortage is not considered critical in view of the long-term nature of the estimate, it is indicative of the delicate balance of water in Israel.

III. The Yarmouk River Project of Jordan

In June 1961 the Harza Engineering Company International presented the Jordanian East Ghor Canal Authority with plans for the Yarmouk-Jordan Valley Development Project, which places primary dependence upon the waters of the Yarmouk River -- Jordan's major water resource. This proposal for irrigation in the Jordan Valley and for power generation in the Yarmouk Valley is based on five stages, proposed for completion in 1979. By this date 119,000 acres of the Jordan Valley are to be irrigated and a power-generating capacity of 42,700 kw is to be provided. Under terms of the 1953 Yarmouk River Treaty, Syria will receive a minimum of 10 percent of this energy.

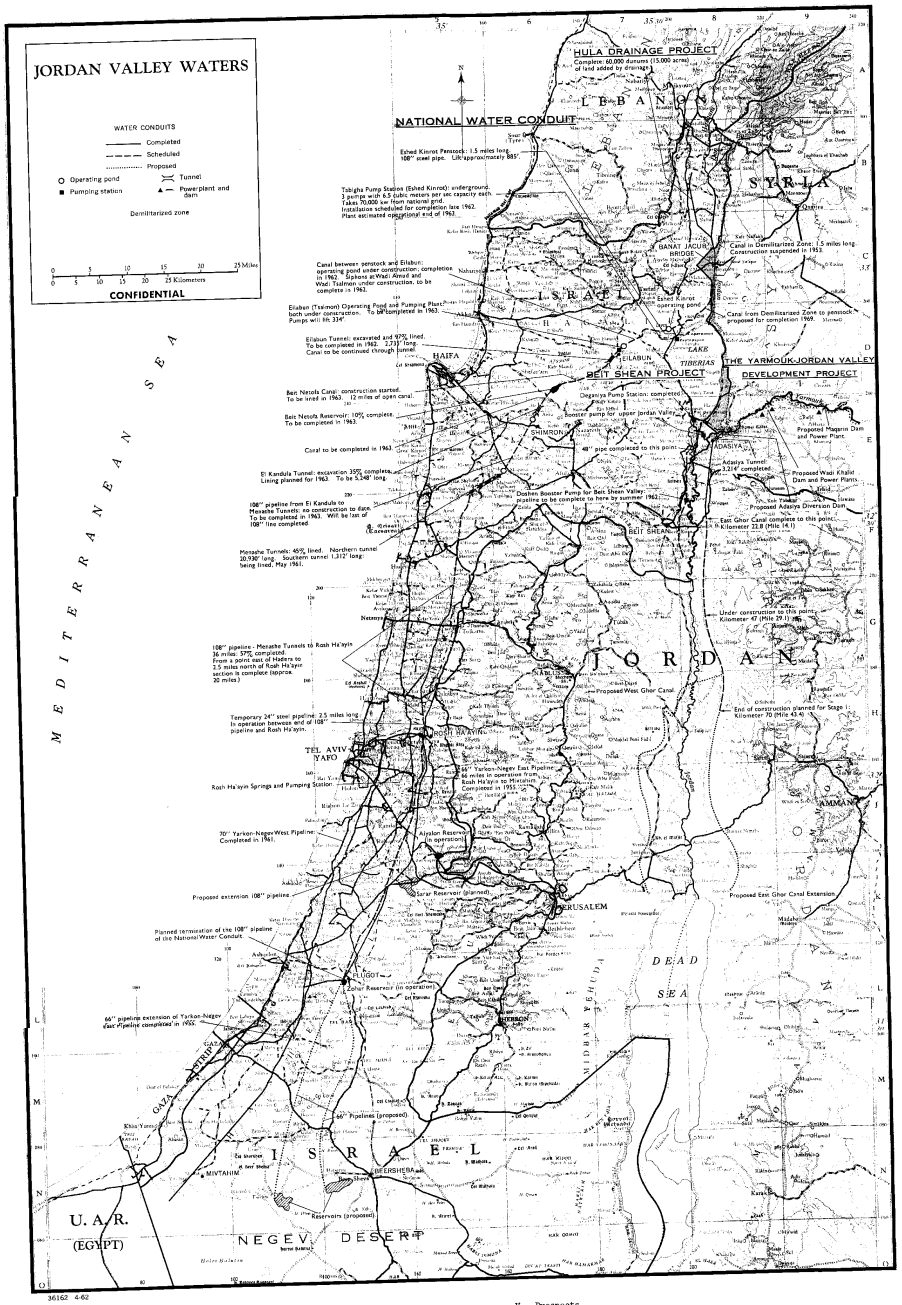
Stages I and II of the project have been included in the Jordanian Five Year Program for Economic Development (1962-67). Stage I, which is being supported by the U.S. Aid Mission to Jordan, consists of a 3,214-foot tunnel and 43 miles of open canal on the East Ghor, extending south as far as Wadi Zarqa. This work was actually begun in 1958 and has now been completed to Kilometer 22.8, a distance of 14.1 miles. The remaining stages call for a 25-mile extension of the East Ghor Canal and the construction of a 28-mile canal on the West Ghor that will be linked with the East Ghor Canal near Wadi Zarqa. A diversion dam on the Yarmouk at Adasiya and a storage dam on the Yarmouk at Wadi Khalid are features of Stage II. At a later date the height of the Wadi Khalid Dam is to be increased, and a storage dam is to be constructed on the Yarmouk at Maqarin. Powerplants are to be installed below Wadi Khalid, at the Wadi Khalid Dam, and at the Maqarin Dam. When completed the storage dams at Wadi Khalid and Maqarin will provide 250 and 300 million cu m of water, respectively.

When the Yarmouk-Jordan Valley Development Project is implemented, it will require more water than is available from the average annual flow of the Yarmouk River, which amounts to 467 million cu m, and from the storage capacity provided by the Wadi Khalid and Maqarin dams. It is anticipated that much of this deficit can be made up through the construction of storage dams on wadis emptying into the Ghor in Jordanian-controlled territory. The original plan for the Yarmouk-Jordan Valley Project, prepared by Michael Baker, Jr. and Harza Engineering Company in 1953, called for initial use of the waters of Lake Tiberias. Under the present plan, water from sources not completely under Jordanian control will be needed only in the final stages of development and then only if all land presently considered irrigable is used.

Israel has complained about the anticipated reduction in the flow of the Yarmouk River and increase in salinization of the Jordan River below Lake Tiberias that will result from diversion of Yarmouk River water by Jordan. The present flow of sweet water from the Yarmouk permits Israel to irrigate lands in the Jordan and Beit Shean Valleys, using water pumped directly from the Yarmouk and Jordan Rivers -- water that, under the Beit Shean Project, will have to be replaced by water from Lake Tiberias.

IV. Arab Diversion Threats

Three tributaries flowing from Arab territory contribute 572 million cu m of water per year to the Jordan River in Northern Israel. The Dan River, the largest tributary, has an average flow of 258 million cu m per year. Because the Dan rises on the Syrian-Israeli border, its use could not effectively be denied to Israel. The Hasbani River flowing from Lebanon and the Banias River rising in Syria each contribute 157 million cu m per year. Denial of Hasbani and Banias water could reduce the flow of the Jordan River north of Banat Jacub Bridge by about one-half. States of the Arab Bloc have held extended discussions over proposals to divert these headwaters and several plans have been set forth. To date, no real attack has been made on the engineering problems involved or on sources of funds for these retaliatory ventures.



One proposal would divert the Banias southward for a short distance to an area in which the water could be used for irrigation of Syrian territory. An extension of the plan would transport Banias water southward all the way to the Yarmouk River. Because the Banias flows through Syria for only about 5 miles, a reservoir would be required near the Israeli border. Before reaching the Yarmouk, the water would have to be lifted several hundred meters and would then flow through a canal more than 34 miles in length.

Two plans have been advanced for the Hasbani River. One would divert Hasbani waters through a tunnel into the basin of the Litani River. The second would divert Hasbani water into a reservoir on the Banias River for transport to the south. Engineering data are lacking for both proposals.

Any scheme to divert the tributaries of the Jordan from their natural watershed would be costly and would provide scant economic return to Arab nations, even Jordan. Lebanon, already heavily committed in the Litani River Project, and Syria, whose hope for irrigation lies in a dam on the Euphrates River, will be hard pressed to find funds for the diversion of the Jordan River. In Arab deliberations over diversion of the waters of the Hasbani and Banias Rivers, however, political motives are likely to take precedence over economic considerations.

V. Prospects

The Yarmouk is Jordan's only major hope for irrigation water and power generation. Implementation of the Yarmouk-Jordan Valley Development Project will increase the industrial potential of Jordan, nearly double the area of its irrigated agricultural land, and provide land for more than 18,000 farm families. For Israel the River Jordan is the last major untapped water resource. Based upon present water consumption patterns, completion of Stage I of Israel's plan in 1963 will provide for a population increase of approximately 300,000 people. If the full project is completed in 1969, an increase of 560,000 could be accommodated, including 490,000 industrial workers. This is far short of the projected population increase of 2 million discussed optimistically in Israel and fearfully in Arab states. In view of its high dependence upon the water of Lake Tiberias, Israel is likely to exercise precaution to maintain a high water level and a low degree of salinity in the lake. As a working reality, many features of the present plans for development of the water resources of the Jordan Valley could be accomplished through the use of the water of the Jordan River by Israel and the use of the water of the Yarmouk River by Jordan. Nevertheless the chronic Arab protest against the use of Jordan River water outside the Jordan Valley remains unaltered.

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S E-C-R-E-T

In the course of GG/N's discussions with [redacted] ONE. on questions regarding the Israeli water problem, it was decided that progress in the last six months on the Jordan project does not warrant updating at this time of the GM on Israel water. Both OCI and ONE agree that another GM on the topic will be appropriate in the early Fall.

25X1A

GM 62-5

D/GG memo
report for
November 62

STATINTL

TRANSMITTAL SLIP	DATE 25 April 1962
TO: [redacted] St/P	
ROOM NO. 4 F 41	BUILDING HQ

REMARKS:

Enclosed are the photolith masters and a carbon copy dummy for GM 62-5, The Struggle for Jordan Waters, which will be assembled in D/GC and sent to reproduction by that Division. When you have finished reading this GM, will you kindly pass it on to [redacted] Thanks.

STATINTL

FROM: [redacted] per DMA

STATINTL

ROOM NO. 3 E 70B	BUILDING HQ	EXTENSION 6900

FORM NO. 241 REPLACES FORM 36-8 WHICH MAY BE USED. ☆GPO : 1957 - O - 439445

Project No. 62.1942 Report No. GM 62-5

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C-O-N-F-I-D-E-N-T-I-A-L

CENTRAL INTELLIGENCE AGENCY
Geography Division, ORR

Project Initiation Memorandum

Project No. 62.1992

28 March 1962

1. Subject of Proposed Project: Israeli-Jordanian Water Plans.

2. Statement of Problem: To analyze Israel's National Pipeline and Jordan's Yarmuk-Jordan Valley Development Project as they proceed towards open competition for water of the Jordan River valley. A Geographic Intelligence Memorandum (GM 60-3) was produced in 1957 and a Geographic Support Project (GP 60-16:L) for the Department of State (Sanger) in 1960. In 1961 we looked into the situation and decided it did not warrant a redo. Now, progress has been made, shootings have occurred, and DD/P/NE has asked for a rundown on the situation. (See attached outline.)

3. Requester: [redacted] DD/P 25X1A

4. Responsible Analyst, Branch: [redacted] GG/N. 25X1A

5. Kind and Extend of Cooperation Desired From:

   a. Other Divisions of the G Area: D/GC to prepare one map.
   b. Other Parts of CIA: Possibly OCR/GR.
   c. Outside CIA: AMS, State, ACSI, Army Document Library.

6. Estimated Manhours in D/GG: 80

7. Probable Completion Date: GG/N to complete about 9 April 1962; publication approximately two weeks later.

8. Form of Final Publication: CIA/RR GM — Does it deserve this?

9. Recommendations for Distribution of Finished Report: Standard Distribution for the GM, with 10 copies allocated for [redacted] 25X1A

25X1A [redacted] 25X1A
Chief, Geography Division

[redacted]
Chief, Geographic Research
Date 3 April 62

[redacted] 25X1A
Assistant Director, ORR
Date 3 Apr 62

30 MAR 1962

Project No. 62.1992

OUTLINE

I. Introduction.

II. Brief of Israel's Master Plan.

III. Problems arising in Israel in connection with execution of Master Plan.

A. Serious lowering of coastal plain water table.
B. The level of Lake Tiberias when pumping begins.
C. Total water available vs. capacity of National Pipeline.
D. Projected use of water greater than potential supply.

IV. Brief of Jordan's Ghor Project.

V. Regional Competition for Water.

A. Available supply
B. Utilization potential
C. National aspirations (Israel, Jordan, Syria).

Schedule for
completion

To D/GC for
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1992

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map / Sept 1

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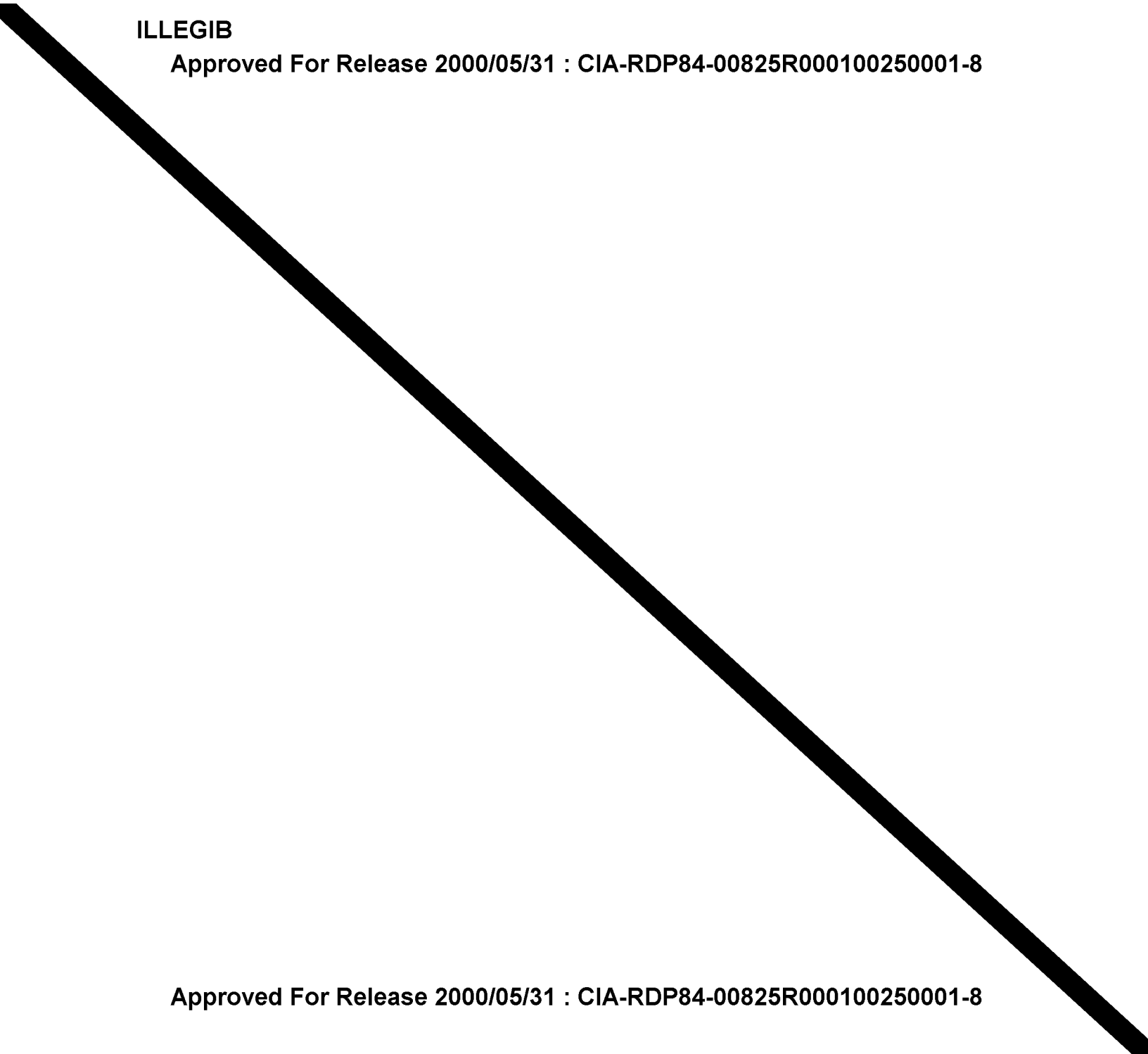

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3	OCh/G		6 apr.
4	D/GG/[redacted]		
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FORM NO. 237 Replaces Form 30-4 which may be used. (40)

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